REMARKS/ARGUMENTS

Applicants acknowledge with appreciation the Examiner's determination that claims 9-12 have been allowed.

Claims 1-8 and 13-16 have been rejected, 35 USC 102(e) as anticipated by Rosen et al patent 6,487,276 (hereinafter Rosen). In response thereto applicants have amended claims 1, 5, and 13 and have added new dependent claims 17, 18, and 19 to emphasize the distinctions between their invention and the Rosen teaching and disclosure, as discussed below.

The particular technique used by Rosen to determine the physical makeup of a transmission line can best be characterized as an "iterative" procedure, which is a well-known mathematical technique to locate a minimum function. This iterative approach, however, is not related to applicants' invention.

To understand the technique of Rosen, consider the disclosure material cited by the Examiner, namely column 9, line 12 through column 13, line 35. In particular on line 35 of column 11 Rosen defines a so-called error function E which is the difference between estimated electrical measurements from a pre-determined model line (ml) and the actual measurements from the transmission line under test (ssl). The model line is iteratively selected from a set of model lines which are representative of the subscriber lines expected to be present in the outside plant of the telephone company, which lines are the physical lines being tested for their ability to support high speed transmission. Thus a set of error functions corresponding to the iteratively selected model lines is computed, and the model line that produces the smallest error function E is presumed to be equivalent to the actual transmission line under test.

Rosen thus discloses and teaches a technique supposedly to deduce the composition of a physical transmission line using an iterative minimization procedure. Such an approach is more formally characterized as a "heuristic" approach, in contrast to an "algorithm", since there is no verification or proof that the model loop producing the minimum error function relates in any manner to the actual physical line under test. Such a heuristic method also has a high computational complexity, and as more model loops are added to the set for purposes of refinement, the computational complexity renders the reconstruction method virtually useless for determining the physical makeup of an actual transmission line. Further, adding more loops to the number of model loops cannot assure convergence to the actual physical line under test

Applicants respectfully submit that the Examiner has mischaracterized the Rosen disclosure by stating that Rosen applies a prescribed mathematical algorithm to an output signal. While applicants' invention involves, as disclosed and claimed, an algorithmic approach to reconstruction, Rosen's teaching and disclosure do not, since Rosen uses a heuristic approach based on the Rosen models. Specifically, applicants' invention involves the use of a linear operator equation and specifically equation (6) or different versions or formulations equivalent to equation (6). Since such equations are directly solvable by a mathematical algorithm, there is no iteration, approximation, or estimation involved in the reconstruction process. The system parameters in accordance with applicants' invention are precisely determined, and the existence of a solution is guaranteed, whereas in Rosen there is no guarantee of even the existence of a solution.

The crux of applicants' invention is thus the formulation of a linear operator equation with the configuration parameters being directly reconstructed by applying a mathematical

algorithm to solve the linear operator equation. Accordingly, applicants have amended claims 1, 5, and 13 to recite that the linear operator is a linear operator equation which a mathematical algorithm is applied and further have added dependent claims 17, 18, and 19 reciting that the equation is equation (6). It is only through applicants' invention that it is now possible directly to reconstruct the system parameters from actual measured data and be guaranteed a solution exists.

The applicants also wish to point out to the Examiner that the equations for E and E' at column 11, line 35 define the error function. As stated by Rosen in column 11, lines 31-33, "the computer finds the 'best' matching model line by calculating an error function for each model line (ml)." This is completely different from applicants' invention and does not, as the Examiner asserts, apply a mathematical algorithm to an output signal. Nor is there any reference or suggestion here to the use of a linear operator, as employed by applicants and recited in the claims which have been rejected.

Accordingly, reconsideration and allowance of claims 1-8 and 13-16, as amended, and favorable consideration and allowance of claims 17, 18, and 19 are respectfully requested.

In as much as claims 9-12 have been allowed and claims 1-8 and 13-19 are deemed allowable, as discussed above, it is believed that this application is in condition to be passed to issue, and such action is also respectfully requested. However, if the Examiner believes it would in any way expedite the prosecution of this application, the Examiner is invited to telephone applicants' attorney at the number set forth below.

Respectfully submitted,

Joseph William Lechleider, et al.

By _____

James W. Falk
Attorney for Applicants
Reg. No. 16,154
Tel.: (732) 699 – 4465

PAGE 8/8 * RCVD AT 5/4/2004 3:41:24 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-1/0 * DNIS:8729306 * CSID:17323363004 * DURATION (mm-ss):03-10